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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Anders Hyltander

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EXAMINER

CARLOS, ALVIN LEABRES

ART UNIT

PAPER NUMBER

3715

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/529,496	Applicant(s) HYLTANDER ET AL.	
	Examiner ALVIN L. CARLOS	Art Unit 3715	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The following is a Final Office action in response to communications received March 10, 2009. Claims 1 and 7. Claims 1 and 3-22 are now pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 5, 7-8, 11-12, 14-22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobus 5769640 in view of Rice 6310619.

Re claim 1, Jacobus discloses a method for generating a virtual anatomic environment for use in a computer based visual simulation of minimally invasive surgery (column 2 lines 22-29), comprising providing a main virtual anatomic environment (column 4 lines 10-19), all of the local anatomic environments of the library being separately modeled three-dimensional models each representing an individual anatomic variation in a local internal area of a living being (column 7 lines 6-9 and column 10 lines 27-29), and selecting a local anatomic environment from a predefined library comprising a set of two or more local anatomic environments (column 3 lines 57-67).

Jacobus discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of the selection of different combinations of selected local anatomic environments in said main virtual anatomic environment thereby allowing generation of different virtual environments, each different virtual environment

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representing anatomic variations occurring in living beings including the selected local anatomic environment in said main virtual anatomic environment to form said virtual anatomic environment.

However, Rice teaches the selection of different combinations of selected local anatomic environments in said main virtual anatomic environment thereby allowing generation of different virtual environments, each different virtual environment representing anatomic variations occurring in living beings including the selected local anatomic environment in said main virtual anatomic environment to form said virtual anatomic environment, (column 2 lines 65-67, column 3 lines 1-36 and column 12 lines 9-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jacobus's invention by incorporating Rice's teaching in order to provide a computer-implemented virtual reality, tissue-specific body model that increases the efficiency and accuracy of anatomical study in an environment having user-variable physical and environmental properties as taught by Rice (column 3 lines 37-40).

Re claim 5, Jacobus in view of Rice discloses all of the claimed subject matter as discussed above. In addition, Rice teaches the main virtual anatomic environment is arranged to model an internal cavity of a human and the set of local anatomic environments is arranged to simulate different arrangements of arteries, veins and ducts around an organ arranged in internal cavity (column 5 lines 1-29 and column 12 lines 6-14).

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Re claim 7, Jacobus discloses a device for generating a virtual anatomic environment for use in a computer based visual simulation of minimally invasive surgery (column 2 lines 22-29), a library comprising a set of two or more local anatomic environments, all of the local anatomic environments of the library being separately modeled three-dimensional models each representing an individual anatomic variation in a local internal area of a living being (column 7 lines 6-9 and column 10 lines 27-29).

Jacobus discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of a modeling device for providing a main virtual anatomic environment and means for incorporating one of the local anatomic environments of the library into the main virtual anatomic environment, together forming said virtual anatomic environment, thereby allowing generation of different virtual environments, each different virtual environment representing anatomic variations occurring in living beings.

However, Rice teaches a modeling device for providing a main virtual anatomic environment (column 5 lines 30-45), means for incorporating one of the local anatomic environments of the library into the main virtual anatomic environment, together forming said virtual anatomic environment, thereby allowing generation of different virtual environments, each different virtual environment representing anatomic variations occurring in living beings (column 5 lines 46-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jacobus's invention in view of Rice in order to provide a computer-implemented virtual reality, tissue-specific body model that increases the

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efficiency and accuracy of anatomical study in an environment having user-variable physical and environmental properties as taught by Rice (column 3 lines 37-40).

Re claim 8, Jacobus in view of Rice discloses all of the claimed subject matter as discussed above. In addition, Rice teaches a selection device for selecting one of local anatomic environments from library to be included in virtual anatomic environment (column 6 lines 62-67 and column 7 lines 1-7).

Re claim 11, Jacobus in view of Rice discloses all of the claimed subject matter as discussed above. In addition, Rice teaches the main virtual anatomic environment is arranged to model an internal cavity of a human (column 12 lines 6-14), the set of local anatomic environments is arranged to simulate different arrangements of arteries, veins and ducts around an organ arranged in internal cavity (column 5 lines 1-12).

Re claim 12, Jacobus in view of Rice discloses all of the claimed subject matter as discussed above. In addition, Rice teaches a device for generating a virtual anatomic environment (column 5 lines 30-45).

Re claims 14 and 15, Jacobus in view of Rice discloses all of the claimed subject matter as discussed above. In addition, Jacobus discloses selecting a certain local anatomic environments from the library and including it into main virtual anatomic environment by user selection (column 3 lines 57-67).

Re claim 16, Jacobus in view of Rice discloses all of the claimed subject matter as discussed above. In addition, Rice teaches the main virtual anatomic environment is arranged to model an internal cavity of a human (column 12 lines 6-14), the set of local

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anatomic environments is arranged to simulate different arrangements of arteries, veins and ducts around an organ arranged in internal cavity (column 5 lines 1-12).

Re claims 17 and 18, Jacobus in view of Rice discloses all of the claimed subject matter as discussed above. In addition, Rice teaches the main virtual anatomic environment is arranged to model an internal cavity of a human (column 12 lines 6-14), the set of local anatomic environments is arranged to simulate different arrangements of arteries, veins and ducts around an organ arranged in internal cavity (column 5 lines 1-12).

Re claims 19 and 20, Jacobus in view of Rice discloses all of the claimed subject matter as discussed above. In addition, Rice teaches a device for generating a virtual anatomic environment (column 5 lines 30-45).

Re claims 21 and 22, Jacobus in view of Rice discloses all of the claimed subject matter as discussed above. In addition, Rice discloses components included in the local anatomic environment are excluded in the main virtual anatomic environment (column 7 lines 3-7).

4. Claims 3-4, 6, 9-10 and 13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobus 5769640 in view of Rice 6310619 and further in view of Ramshaw 5791907.

Re claim 3, Jacobus in view of Rice discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of randomly selecting one of the local anatomic environments in the library.

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However, Ramshaw teaches randomly selecting one of the local anatomic environments in the library (column 17 lines 9-12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jacobus in view of Rice invention and further in view of Ramshaw in order to provide a cost-effective and quality medical training including an interactive user environment for surgical procedure as taught by Ramshaw (column 2 lines 50-52).

Re claim 4, Jacobus in view of Rice discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of the probability of randomly selecting a certain local anatomic environment essentially corresponds with the degree of occurrence of that local anatomic environment in living beings.

However, Ramshaw teaches the probability of randomly selecting a certain local anatomic environment essentially corresponds with the degree of occurrence of that local anatomic environment in living beings (column 17 lines 25-31).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jacobus in view of Rice invention and further in view of Ramshaw in order to provide a cost-effective and quality medical training including an interactive user environment for surgical procedure as taught by Ramshaw (column 2 lines 50-52).

Re claim 6, Jacobus in view of Rice and further in view of Ramshaw discloses all of the claimed subject matter as discussed above. In addition, Ramshaw teaches

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selecting a certain local anatomic environments from the library and including it into main virtual anatomic environment by user selection (column 17 lines 25-31).

Re claim 9, Jacobus in view of Rice and further in view of Ramshaw discloses all of the claimed subject matter as discussed above. In addition, Ramshaw teaches randomly select one of local anatomic environments from the library to be included in virtual anatomic environment (column 17 lines 9-12).

Re claim 10, Jacobus in view of Rice and further in view of Ramshaw discloses all of the claimed subject matter as discussed above. In addition, Ramshaw teaches randomly select one of local anatomic environments in a way that the probability of selecting a certain local anatomic environment essentially corresponds with the degree of occurrence of that local anatomic environment in human beings (column 17 lines 25-31).

Re claim 13, Jacobus in view of Rice and further in view of Ramshaw discloses all of the claimed subject matter as discussed above. In addition, Ramshaw teaches randomly selecting one of the local anatomic environments in the library (column 17 lines 9-12).

Response to Arguments

5. Applicant's arguments filed March 10, 2009 have been fully considered but they are not persuasive.

6. In response to the applicant's arguments that Jacobus in view of Rice does not disclose the "local anatomic environments of the library are separately modeled" and "all of the local anatomic environments of the library being separately modeled three-

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dimensional models each representing an individual anatomic variation in a local internal area of a living being”, the Examiner disagrees. The Examiner interpreted the local anatomic environment as organs, tissues, ligaments, muscles, arteries, veins and cartilage (including its size, position, surface characteristics) located in the main environment (human body). Jacobus discloses during the surgical simulation, the position of the instrument is determined and fed into a geometric model of an organ (located in the main body shown in figure 1). The geometric model includes data representing the organ size, position, surface characteristics (in terms of elasticity, resistance to searing, slipperiness, etc.) (column 7 lines 6-9 and column 10 lines 27-29). In addition, Rice is used to further support a three-dimensional, virtual reality, tissue specific model of a human (including organs) that provides a high level of user-interactivity. The model functions can be analyzed and user-modified on a tissue-by-tissue basis, thereby allowing modeling of a wide variety of normal and abnormal tissue attributes and corresponding study thereof (see abstract and column 12 lines 9-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jacobus in view of Rice invention by providing a geometrical model of an organs that would have variation of size and characteristics, and locating it accordingly in the main body in order to provide a more realistic virtual model that represents the complete anatomical structure of the human being based from each patient's information (CT data, PET data, MRI data, etc.).

7. In response to the applicant's arguments that Jacobus in view of Rice does not disclose the “library of local anatomic environment (e.g. organs, tissues, ligaments,

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muscles, cartilage)", the Examiner disagrees. Jacobus discloses "storing geometrical model of an organ in a database including the size, position, and one or more surface characteristics associated therewith" in claim 19.

8. In response to the applicant's arguments that Jacobus in view of Rice does not disclose the "modeling local anatomical environments each representing an individual anatomic variation in a local internal area of a living being", the Examiner disagrees. Jacobus utilize a 3D graphics generator that generate and store the geometric model representing the organ size, position, surface characteristics (in terms of elasticity, resistance to searing, slipperiness, etc.) (column 7 lines 6-9 and column 10 lines 27-29).

9. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALVIN L. CARLOS whose telephone number is (571)270-3077. The examiner can normally be reached on 7:30am-5:00pm EST Mon-Fri (alternate Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xuan Thai can be reached on (571)272-7147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alvin L Carlos/
Examiner, Art Unit 3715
June 1, 2009

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Primary Examiner, Art Unit 3715